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Communication and Virtual Visiting for Families of Patients in Intensive Care during the COVID-19 Pandemic

A UK National Survey

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Abstract

Rationale: Restriction or prohibition of family visiting intensive care units (ICUs) during the coronavirus disease (COVID-19) pandemic poses substantial barriers to communication and family- and patient-centered care.

Objectives: To understand how communication among families, patients, and the ICU team was enabled during the pandemic. The secondary objectives were to understand strategies used to facilitate virtual visiting and associated benefits and barriers.

Methods: A multicenter, cross-sectional, and self-administered electronic survey was sent (June 2020) to all 217 UK hospitals with at least one ICU.

Results: The survey response rate was 54%; 117 of 217 hospitals (182 ICUs) responded. All hospitals imposed visiting restrictions, with visits not permitted under any circumstance in 16% of hospitals (28 ICUs); 63% (112 ICUs) of hospitals permitted family presence at the end of life. The responsibility for communicating with families shifted with decreased bedside nurse involvement. A dedicated ICU family-liaison team was established in 50% (106 ICUs) of hospitals. All but three hospitals instituted virtual visiting,

although there was substantial heterogeneity in the videoconferencing platform used. Unconscious or sedated ICU patients were deemed ineligible for virtual visits in 23% of ICUs. Patients at the end of life were deemed ineligible for virtual visits in 7% of ICUs. Commonly reported benefits of virtual visiting were reducing patient psychological distress (78%), improving staff morale (68%), and reorientation of patients with delirium (47%). Common barriers to virtual visiting were related to insufficient staff time, rapid implementation of videoconferencing technology, and challenges associated with family members' ability to use videoconferencing technology or access a device.

Conclusions: Virtual visiting and dedicated communication teams were common COVID-19 pandemic innovations addressing the restrictions to family ICU visiting, and they resulted in valuable benefits in terms of patient recovery and staff morale. Enhancing access and developing a more consistent approach to family virtual ICU visits could improve the quality of care, both during and outside of pandemic conditions.

Keywords: COVID-19; intensive care; communication; family; visiting

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Availability of Data and Materials: The data sets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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The coronavirus disease (COVID-19) pandemic has completely proscribed the concept of open visiting in intensive care units (ICUs) around the world and consequently poses substantial barriers to communication and family- and patient-centered care. Restriction or complete prohibition of family visiting the ICU has been deemed necessary because of concerns around virus transmission to and from visitors (1, 2). Such policies reflect a utilitarian stance (3) (i.e., the greatest good for the greatest number) and have been instituted previously during severe acute respiratory syndrome (SARS) (4). Before the COVID-19 pandemic, ICU visiting policies have historically limited the family presence at the bedside and in some countries have restricted visiting by individuals not deemed to meet the legal definition of a family member or substitute decision-maker or family consultee (5–7).

The emotional and psychological impact, on family members in particular, of visiting restrictions during the COVID-19 pandemic has been highlighted in numerous reports, in academic literature, and in traditional, mainstream, and online social media (8, 9). Restricted ICU visiting policies outside of a pandemic influence the psychological well-being of family members more than they influence ICU patients, as family members experience distress and anxiety because of being kept from the bedside (10). The absence of family members at the ICU bedside has a negative impact on patient recovery and psychological outcomes (11, 12). Family absence also negatively influences information transfer and has the potential to reduce the understanding of patient wishes, past medical history, and current care history, with family members often being the best keepers of continuity-of-care information.

Healthcare professionals who have a role at the bedside providing family-centered care (13) have experienced moral injury and distress associated with enforcing ICU visiting restrictions during the COVID-19 pandemic (14). These healthcare professionals have had to deal with family members' anger, distress, and grief when enforcing restricted family ICU visiting policies over the telephone or over videoconferencing platforms. Unfortunately, the pace of the COVID-19 surge necessitated the implementation of pandemic-related visiting policies at speed, without allowing time for consultation with key stakeholders, including patients and family (14).

To obtain objective data on virtual visiting and communication strategies used

with families of patients admitted to the ICU during the COVID-19 pandemic in the United Kingdom, we conducted a cross-sectional survey of all UK hospitals with at least one ICU. Our primary objective was to understand how communication between families and the ICU team was enabled and changed during the pandemic. Secondary objectives were to understand the strategies to facilitate virtual family visiting and the associated benefits and barriers. We sought this information to inform not only guidelines and policy related to virtual family visiting during both ongoing visiting restrictions and future pandemics but also an enduring, routine method for enabling visiting by those family members who are unable to be physically present in the ICU because of geographical distance, other caregiving or work commitments, or illness or frailty.

Methods

Study Design and Sample

We conducted a multicenter, cross-sectional, self-administered electronic survey sent to all 217 National Health Service (NHS) hospitals with at least one ICU in England, Wales, Scotland, and Northern Ireland. We generated our sample frame initially by using the Intensive Care Society (www.ics.ac.uk) registry of all UK hospitals with at least one ICU. We further refined our sample frame and identified e-mail contacts using the database of the LifeLines project (<https://www.kingshealthpartners.org/our-work/lifelines/about-lifelines>). LifeLines is a philanthropic COVID-19 pandemic rapid response project that delivered fourth generation-enabled Android tablets (Google) to ICUs with preinstalled aTouchAway software (Aetonix) for the purposes of supporting family virtual visits to the ICU.

Survey Development

Our interprofessional investigator team comprising clinicians and researchers from medicine and nursing, with expertise in intensive care, iteratively generated survey items under the domains of 1) the family visiting policy during the COVID-19 pandemic; 2) communication strategies for the provision of clinical updates and advanced care planning; 3) communication at the end of life; 4) virtual family visiting, including the use of the LifeLines virtual visiting solution; and 5) communication training. We reduced items on the basis of face and content validity and relevance to our study objectives. This enabled

the production of a concise survey without removing domains or questions deemed important to the survey objectives. We generated a variety of response options for the purposes of generating categorical data and also provided options for open-ended comments.

Survey Pretesting

Eight members (newly graduated doctors) of a COVID-19 pandemic family communication team with experience in communication and virtual visits with families of ICU patients reviewed the survey and provided comments on the overall face and content validity, including item relevance and importance, identification of missing items, and response options; comprehension of items and response options; and clarity of wording. The final version of the survey comprised six domains with 15 questions in total and an additional 2 questions on the usual number of ICUs and ICU beds compared with those at the peak COVID-19 surge. Response options were mostly categorical (with guidance to tick all that apply), with open-ended options enabling further description as well as the opportunity to provide examples of positive and negative experiences with video calls.

Survey Administration

Before the survey administration, the LifeLines team communicated with ICUs regarding support for virtual visiting to foster engagement and to determine the most appropriate contact person for survey administration. The survey link was e-mailed in early June of 2020 to a senior ICU nurse or ICU consultant. The LifeLines team was available via phone or e-mail throughout the survey administration period to address any questions. The survey link gave access to the online survey hosted on SurveyMonkey. Participants were encouraged to forward the link to colleagues if they believed colleagues were the more appropriate individuals to address the survey questions; return of only one survey for each hospital was mandated. To personalize and maximize the response rate, each hospital was provided an identification code to enter when completing the survey; e-mail reminders were sent to nonresponders at 2 weeks and 1 month after the initial invitation.

Approval for survey conduct was obtained via the King's College London Ethics Committee Minimal Risk Assessment (identifier MRA-19/20-19282). Return of the survey was considered indicative of consent.

Data Analysis

We used descriptive statistics, including means and standard deviations (SDs) for continuous variables and frequencies and proportions for categorical variables. We report proportions using the number of hospitals that responded to each specific question. We conducted summative content analysis (15) of qualitative responses to open-ended questions. One author (L.R.) developed the initial codebook based on the review and coding of qualitative responses to open-ended response options. Codes were member checked with the research team and then quantified across the data.

Results

We e-mailed our survey to all 217 NHS hospitals with at least one ICU in the United Kingdom or the Isle of Man. We received completed surveys from 117 NHS hospitals (response rate 54%) (Table 1). These 117 survey responses provided data representing family visiting practices during the spring 2020 COVID-19 surge from over 182 ICUs (two respondents did not identify ICU numbers). During the COVID-19 surge, physical

locations used as ICUs by responding hospitals increased by 125, for a total of 307 functional ICUs (mean [SD] increase, 1 [1] ICU). Data from the Intensive Care National Audit and Research Centre COVID-19 pandemic report indicate that 10,935 critically ill patients with confirmed COVID-19 were admitted to ICUs in England, Wales, and Northern Ireland up until August 31, 2020 (16).

Change in Family Visiting Policy and Communication Practices during the COVID-19 Pandemic

All 117 (100%) hospitals (182 ICUs) reported that the in-person family visiting policy in their ICUs changed during the COVID-19 surge. Nineteen (16%) hospitals (28 ICUs) indicated that in-person family visiting was not permitted under any circumstance; the remainder indicated restricted visiting in particular circumstances. End-of-life status of an ICU patient was the most common reason for permitting family presence in the ICU (Figure 1). A dedicated ICU family communication team was established in 59 (50%) responding hospitals (106 ICUs). Figure 2 shows the composition of ICU family communication teams established during the COVID-19 surge. A wide range of personnel

were coopted into this role, with personnel most commonly comprising nurses with (40 of 59, 68%) and without (34 of 59, 58%) ICU experience (Figure 2).

During the COVID-19 surge, 42 (37%) responding hospitals (61 ICUs) indicated a change in practice in terms of the ICU team member responsible for the first contact with a patient's family after ICU admission. In 13 of 42 (31%) hospitals, this responsibility was shifted to the newly formed dedicated communication or family-liaison team. Content analysis of open-ended qualitative responses describing practice change indicated a decrease in this responsibility for senior ICU medical staff (11 of 42 respondents, 26%) and for bedside nursing staff (10 of 42, 24%). Two (5%) hospitals indicated an increase in this responsibility for senior medical staff (2 of 42, 5%). All but two (2%) hospitals (that used a video platform) indicated that the first contact with family was made via telephone.

Sixty-one hospitals (97 ICUs) changed the process of communicating status updates to the family during the COVID-19 pandemic; 21 of 61 (34%) of these hospitals implemented a dedicated ICU communication/family-liaison team. As with initial contact after ICU admission, the most commonly described practice change reported for daily status updates was a reduction in bedside nurse involvement (27 of 61, 44%) (Table 2). The frequency of family update calls increased in most responding hospitals (67 of 111, 60%), which was likely due to the absence of family at the bedside for informal updates, whereas 14 of 111 (13%) hospitals reported a reduced update frequency.

Only 32 (30%) hospitals (58 ICUs) indicated they had delivered staff training on family communication and virtual visiting during the COVID-19 spring surge. Open-ended survey responses described training on virtual visiting or communication platforms, how to establish consent for virtual visiting, guidance on difficult communication situations, and breaking bad news. Respondents identified the involvement of clinical psychologists and palliative care specialists in providing this training.

Virtual Visiting

Only three (3%) hospitals reported that virtual family visiting had not been attempted in the ICU. Indications for virtual visiting varied across responding sites, with the most common indications being alert and oriented patients (95 of 108 [88%] responding hospitals

Table 1. Characteristics of responding hospitals

Responding Hospitals (N = 117)	n (%)
Country	
England	99 (85)
Scotland	6 (5)
Northern Ireland	3 (3)
Wales	1 (1)
Isle of Man	1 (1)
Not reported	8 (7)
Number of ICUs	
1	75 (64)
2	22 (19)
3	5 (4)
4	8 (7)
5	2 (2)
6	1 (1)
0	2 (2)
Not reported	3 (3)
Number of ICUs at peak COVID-19 surge	
1	28 (24)
2	32 (27)
3	22 (19)
4	12 (10)
5	8 (7)
6	1 (1)
7	2 (2)
8	3 (3)
9	2 (2)
Not reported	6 (5)

Definition of abbreviations: COVID-19 = coronavirus disease; ICU = intensive care unit.

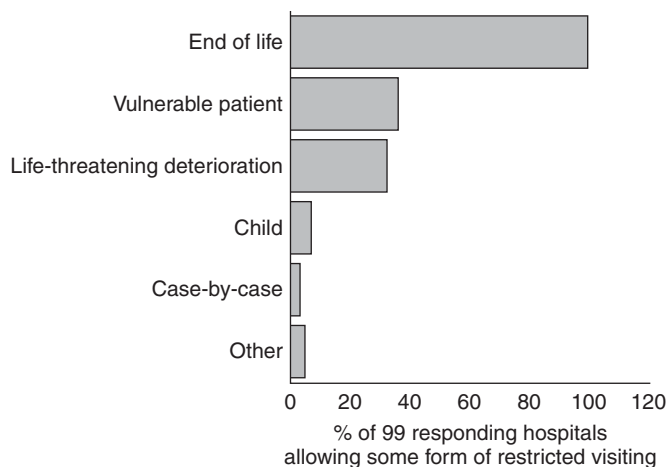


Figure 1. Reasons for allowing a family to visit the intensive care unit (ICU) during the peak coronavirus disease (COVID-19) surge. Other indications included long-term weaning or a prolonged ICU stay ($\times 2$), preintubation status ($\times 1$), the use of a booking and time-limited appointment system ($\times 1$), and changing indications over the course of the COVID-19 surge. Nineteen (16%) hospitals indicated that in-person family visiting was not permitted under any circumstances. The percentage of 99 responding hospitals allowing some form of restricted visiting is shown.

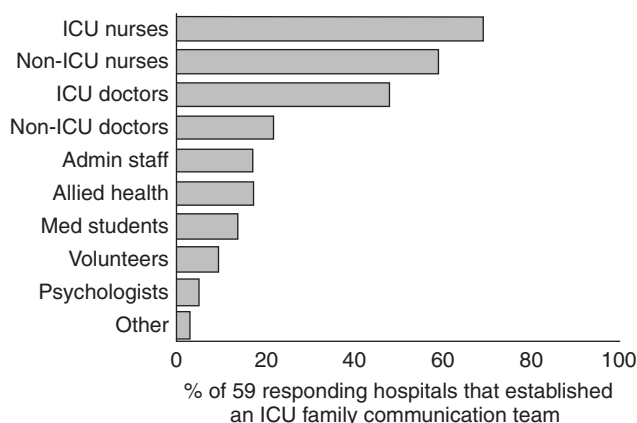


Figure 2. Composition of intensive care unit (ICU) family communication teams. Med students included recently (expedited graduation) graduated doctors. "Other" comprised nurse specialists in organ donation, clinical support workers, and existing family-liaison teams. The respondents could tick multiple options ("all that apply"); therefore, the percentages do not sum to 100. The percentage of 59 responding hospitals that established an ICU family communication team is shown. Admin = administrative; Med = medical.

[159 ICUs]) and patients at the end of life (68 of 108 [63%] responding hospitals [112 ICUs]). Conversely, eight (7%) hospitals (11 ICUs) indicated that patient end of life was a contraindication to use virtual visiting. Use for unconscious or sedated patients was variable, with respondents representing 49 of 108 (45%) hospitals (80 ICUs) stating that they would use virtual visiting in this situation and 25 (23%) hospitals (45 ICU) indicating that they would not. Open-ended comments identified this

variation as problematic for families when patients were transferred between organizations: "When patients moved from other units, we sometimes had to tell relatives that, although they had done video calls with the other hospital without consent, we weren't going to do them without consent. That was very upsetting for families and they were understandably angry."

Other situations in which virtual visiting was and was not used are shown in Table 3; the

videoconferencing platforms used are shown in Table 4. The most commonly used platforms were the bespoke version of the virtual visiting platform, a TouchAway, developed by the LifeLines team (43, 41%), followed by Skype (27, 25%) and FaceTime (24, 23%).

In most (57, 51%) hospitals (and similar to in-person visiting before the COVID-19 pandemic), the decision that a virtual visit was appropriate was made by the ICU nursing staff; however, this responsibility also fell to ICU senior medical staff (26, 23%) or the COVID-19 pandemic family communication or liaison team (13, 13%) or was described as a team decision (10, 9%). Facilitating a visit was mostly a nursing (65, 59%) or family communication team responsibility (19, 17%). The frequency of virtual visiting was highly variable both across and within hospitals, with 18 (17%) responding hospitals specifically commenting that it was highly variable within their own organization. However, 44 (41%) hospitals indicated that they routinely managed a daily virtual visit (8 [7%] managed virtual visits more than once a day, 13 [12%] managed virtual visits every second day, 11 [10%] managed virtual visits twice a week, and 5 [5%] managed virtual visits once a week).

Follow-up with family after a virtual visit occurred in 62 of 108 (57%) hospitals (98 ICUs). Summative content analysis of open-ended responses describing this follow-up indicated that this was mostly done by telephone (43 hospitals), either as a specific check-in after the virtual visit or as part of routine telephone updates. Eleven hospitals indicated that they followed up with the family at the end of the video call to make sure that all concerns were addressed. Follow-up was primarily a nursing or family communication team task.

Benefit of and Barriers to Virtual Visiting

Alongside the ability to link family to their loved one and enable the ICU team to provide informational and emotional support for families, virtual visiting was seen to have other benefits. These included being used as a tool to promote patient psychological and physical recovery, provide reorientation for patients with delirium, overcome language or communication barriers, and enhance patient-centered care (Table 5). Respondents from 71 (68%) hospitals (113 ICUs) perceived that virtual visiting improved staff morale. The most frequently identified (56 hospitals, 97 ICUs) barriers to virtual visiting were

family challenges associated with using video-platform technology or accessing a suitable device for videoconferencing. Commonly cited system barriers were lack of staff time, difficulties with fourth-generation or Wi-Fi connectivity, and lack of staff training (Table 6).

Discussion

In this multicenter UK survey reporting on practices representing 117 UK hospitals (182 ICUs) for communication with families of ICU patients and rapid implementation of virtual visiting during the COVID-19 pandemic, we identified variation in 1) restrictions to in-person visiting, 2) the type of patients for whom virtual visiting by family was offered, and 3) the video platform used to facilitate virtual visiting. Despite this variation, nearly all responding hospitals reported using some form of virtual family visiting. The creation of family communication or liaison teams, frequently comprising non-ICU

healthcare professionals, was a common strategy to overcome the reduced availability of ICU nurses in particular to communicate with families because of their COVID-19 pandemic workload. Despite resource challenges, a substantial proportion of responding hospitals indicated that the frequency of formal telephone updates with family increased during the COVID-19 pandemic, and approximately 40% achieved daily virtual visiting. As well as providing informational and emotional support to families and reducing patient psychological distress, virtual visiting was perceived to have therapeutic benefits, including the reorientation of patients with delirium and patient motivation to engage in therapies. Family challenges associated with the use of technology or access to an appropriate device and lack of staff time to enable video calls or family visits were the most commonly cited barriers to virtual visiting.

Our survey identified widespread adoption of virtual visiting during the COVID-19 pandemic, reflecting UK NHS COVID-19

pandemic guidance (1, 2), and yet there was variation in the indications for virtual visiting, particularly for unconscious and sedated patients or patients at the end of life. This is likely due to differences in local interpretation as to whether virtual visits were in the patient's best interest. Guidance on video communication during the COVID-19 pandemic from the UK Intensive Care Society (17) stressed the importance of 1) following the principles of the 2005 Mental Capacity Act (i.e., decisions made must be in the person's best interests) and, when possible, 2) establishing clear evidence that the patient would have wanted a virtual visit. Establishing a patient's best interests involves consultation with those who know them well (i.e., the family) (18). Therefore, when establishing a patient's best interests for a virtual visit requested by a family, it could be construed as somewhat paternalistic of an organization to be denying this request on the basis of blanket policy. The requirement of evidence of documented consent for virtual visiting from patients with impaired mental capacity on ICU admission is also problematic. Furthermore, establishing prior patient consent for in-person ICU visiting in the event of impaired mental capacity is not routine practice. In fact, it is often a family role to gatekeep who can and cannot make in-person visits to the ICU. Therefore, further revisions of ICU virtual visiting guidance, developed in response to the pandemic, might consider recommending seeking a more congruent and family- and patient-centered approach to ICU visiting that maximizes virtual visiting for incapacitated patients, including at the end of life. These guidelines will have great utility in facilitating the adoption of virtual visiting as a routine option offered to family members

Table 2. Responsibility for communicating status updates during the COVID-19 pandemic

Hospitals Reporting Change (N = 61)	n (%)
Decreased bedside nurse involvement	27 (44)
Increased role of senior physician team	16 (26)
Decreased role of senior physician team	3 (5)
Increased role of junior physicians	3 (5)
Increased role of senior nurses	3 (5)
Decreased role of junior physicians	2 (3)
Did not comment on personnel	11 (18)

Definition of abbreviation: COVID-19 = coronavirus disease.

The data expressed as n (%) do not sum to 100%, as hospitals could indicate more than one change.

Table 3. Indications for virtual family visiting

Indication to Use	n (%)	Indication Not to Use	n (%)
Alert and oriented patients	95 (88)	Patient declines	92 (85)
Patients at the end of life	68 (63)	Family declines	91 (84)
Mechanically ventilated patients	64 (59)	Unconscious or sedated patients	25 (23)
During rehabilitation activities	56 (52)	No documented patient consent	14 (13)
Alert but disoriented patients	49 (45)	Patients at the end of life	8 (7)
Unconscious or sedated patients	49 (45)	Delirium	2 (2)
Based on consent	4 (4)	Other*	3 (3)
Virtual visiting not conducted	4 (4)	—	—
Other†	2 (2)	—	—

Definition of abbreviation: COVID-19 = coronavirus disease.

One hundred eight responding hospitals provided data on these survey items.

*"Other" comprises uncertainty around the next of kin (×1), patients positive for COVID-19 (×1), and the family being too distressed (×1).

†"Other" comprises patients on continuous positive airway pressure or about to be intubated (×1) and patients who are sedated patients (only rarely) (×1).

unable to visit in person outside of a pandemic setting.

We found numerous changes in terms of the responsibility for, as well as delivery of, family communication, which were due to restrictions to in-person family visiting and the COVID-19 surge in ICU admissions. In general, ICU nurses, who normally provide the bulk of informal updates to the family (19), communicated less frequently, and senior ICU physicians communicated updates more

frequently. A common communication strategy was the creation of a family communication or liaison team, frequently comprising healthcare professionals who did not routinely work in the ICU, were currently unable to work in the ICU (i.e., pregnant nurses or physicians), or were freshly graduated healthcare professionals (20). This strategy was enabled through the cancellation of healthcare services, including elective surgery; staff redeployment policies; and early graduation of

doctors and nurses in their last year of training. As such, these teams generally have insufficient training and expertise for complex and difficult conversations, may not offer a long-term solution in the face of extended family visiting restrictions with protracted pandemic conditions, and will not be available to implement virtual visiting outside of pandemic conditions. Local family communication champions may be one solution for implementing and sustaining virtual visiting as an option outside of pandemic conditions.

We identified multiple and numerous videoconferencing platforms being in use during the COVID-19 pandemic, with 43% of hospitals using more than one platform. The use of a single videoconferencing platform, as recommended by the UK Intensive Care Society (17), has obvious advantages in terms of developing training and expertise and for managing technical problems. Indeed, a recent qualitative descriptive study of bereaved family members of 328 decedents (37% of whom died in the ICU) reported the availability and functionality of videoconferencing technology as a key factor in the delivery of high-quality communication during the COVID-19 pandemic (21). The selection of a videoconferencing platform should be done in consultation with information technology specialists to ensure the appropriate infrastructure is available to

Table 4. Video platforms used for virtual visiting

Platforms Used (N = 107 Hospitals)*	n (%)
aTouchAway	43 (41)
Skype	27 (25)
FaceTime	24 (23)
Zoom	18 (18)
Attend anywhere	9 (8)
WhatsApp	8 (7)
Whichever video platform was on patient's own device	7 (7)
accuRx	4 (4)
Microsoft Teams	3 (3)
Jitsi	2 (2)
Webex	2 (2)
Other platform (used by single hospitals only)	9 (8)

*"Other" comprises Blue Jeans, Visionable Connect, Lifesize, Nye Health, Google Duo, VCreate (nonsynchronous family information sharing), Virtual Visit, Trust-developed app, and *ad hoc* use of various platforms.

*Four hospitals reported no use of virtual visiting. More than one video platform was used by 46 of 107 (43%) responding hospitals.

Table 5. Virtual visiting benefits

Benefits (N = 105 Hospitals)	n (%)	Illustrative Quote
Reduces patient psychological distress	82 (78)	"Once patients started to recover, they were very disorientated and being able to see & communicate with their families helped reduce this. I could see patients' fear leaving their faces as they saw their relatives."
Improves staff morale	71 (68)	"It certainly gives patients and families a feeling of being much more in contact with their loved ones and certainly improves their morale and the ICU team's morale." "It was enormously satisfying to enable relatives to see their loved ones."
Reorients patients with delirium	49 (47)	"We had a patient who was recovering from COVID-19, and he was eventually well enough to extubate and reduce sedation, but after 7 days was not yet responsive to the nursing staff. We grew concerned that he had some kind of neurological injury. We organized an audio call, and the family played messages from all different members of the family and played him music, which stimulated him enough that he was fully alert and orientated within 24 hours."
Surmounts communication or language difficulties	47 (45)	"It is amazing seeing patients 'come to life' when they see and speak to their families."
Improves patient engagement with rehabilitation or physiotherapy	46 (44)	"Another patient with Guillain Barre syndrome was quite depressed until she was able to speak to her family daily on FaceTime; after this she engaged better with physio."
Enhances patient-centered care	2 (2)	"Getting to actually meet and see my patient's relatives was a real boost to morale, the nursing staff and doctors enjoyed learning about their patients."
Other	2 (2)	"Conservation of PPE using videocall (aTouchAway) to communicate with staff in and out of side rooms or isolation bays."

Definition of abbreviations: COVID-19 = coronavirus disease; ICU = intensive care unit; physio = physiotherapy; PPE = personal protective equipment. "Other" includes facilitating staff-to-staff communication in and out of COVID-19 cohort areas or infection control rooms (×1) and saving time for nurses (×1).

Table 6. Virtual visiting barriers

Barriers	n (%)
Family-related barriers	
Family inability to use technology or access a device	56 (53)
Family concerns or preferences	17 (16)
System-related barriers	
No staff time to enable video call	49 (47)
Difficulties with 4G or Wi-Fi connectivity	40 (38)
Lack of training	38 (36)
Staff concerns about video call security and privacy	28 (27)
Staff concerns about video calls without prior patient consent	28 (27)
Lack of IT team support	23 (22)
Concerns from information governance and security	20 (19)
Insufficient devices	18 (17)
No dedicated family communication team	16 (15)
No written guidance	15 (14)
Language barriers and difficulty accessing interpreting services	12 (11)
Lack of management or hospital leadership support	5 (5)
Other	6 (6)

Definition of abbreviations: 4G = fourth generation; IT = information technology.

"Other" includes insufficient staff on family communications team or trained with devices (×2), relatives dialing into iPad (Apple) when staff/patients are busy (×1), need to have equipment always charging and need for correct passwords (×1), using more than one platform (×1), and delays with configuring devices as per Trust policy (×1).

support it. Other important considerations when selecting an ICU virtual visiting platform include the need for 1) one-way calling, (i.e., video calls that can only be initiated by the ICU team and that the family cannot reinitiate); 2) secure cloud-based storage and a dashboard of family contact details attributed by their loved one, enabling rapid and easy calling; 3) avoidance of setting up meeting links or two-step authentication for each virtual visit; and (4) generic ICU logins and passwords as opposed to personal account logins. Although family members might prefer on-demand access to virtual visiting (22), workload and privacy concerns prohibit this. Another important consideration is the avoidance of healthcare workers' personal devices because of the inability to block the call origin and because of infection control precautions.

Survey participants reported substantial benefits derived from virtual visiting that extended beyond enabling a connection between the patient and family. Virtual visiting was used as an intervention to promote family participation in care delivery, such as reorientation of patients with delirium and providing patients with motivation to participate in rehabilitation activities, thereby promoting recovery. Such activities replicate those that occur with in-person family

involvement in care delivery (23). Further integration of virtual visiting in the future as a routine option for families may offer a modality of greater flexibility for family participation in care activities by overcoming barriers to in-person visiting, such as family geographical location and work or caregiving commitments. Another perceived benefit is the effect of virtual visiting on staff morale. A recent French study recruiting over 1,000 healthcare workers reported the inability to care for family and regret about visiting restriction policies as important determinants of poor mental health (24). Virtual visiting should be considered an important staff well-being intervention during ongoing pandemic-related visiting restrictions.

Some key barriers to virtual visiting are potentially nonmodifiable, as they are related to the impact of the COVID-19 surge on ICU capacity and the rapid introduction of videoconferencing technology. These include staff availability to make calls, provision of training and guidance, and information technology or security concerns. The most commonly cited barrier, however, was family familiarity with technology and access to a device with videoconferencing capability. This may be reflective of known digital exclusion, with 22% of the United Kingdom's population lacking basic digital skills (25).

Limitations

As with any self-report survey, study limitations include selection and social desirability bias, with responses reflecting the perceptions of individual respondents as opposed to a wider staff consensus. We also did not request data describing family perspectives on benefits and barriers in this survey but are undertaking further work to understand family members' experience. Despite responses from more than 50% of hospitals with ICUs across the United Kingdom, our representation of family communication and virtual visiting practices during the COVID-19 surge may be influenced by the nonparticipation of centers with less interest in the topic, resulting in inaccuracies. Our findings may also lack generalizability to other countries, particularly those with strategies enabling virtual family presence in the ICU already *in situ* before the COVID-19 pandemic.

Conclusions

In this national, cross-sectional study with survey responses representing more than 50% of all UK NHS hospitals with a least one ICU, we found a widespread change in the manner in which ICU teams communicated with families, with some creating communication teams and most adopting some form of virtual visiting. We identified variation in restrictions to in-person visiting, patient indications for virtual visiting, the frequency of virtual visits, and videoconferencing platform selection. Therapeutic benefits of virtual visiting were perceived to extend beyond family informational and emotional support to promoting patient recovery and increasing staff morale. A concerning barrier that needs consideration for the ongoing implementation of virtual visiting is family lack of access to devices and unfamiliarity with videoconferencing technology. Enhancing access and developing a more consistent approach to family virtual visits could improve ICU quality of care, both during and outside of pandemic conditions. ■

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